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Number 61

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OFFICE OF RESEARCH AND REPORTS

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CENTRAL INTELLIGENCE AGENCY
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MEMORANDUM FOR: Recipients of the Geographic Intelligence Review (CIA/RR GIR)

SUBJECT: Discontinuance of Publication

Geographic Intelligence Review No. 61 (CIA/RR GIR 60-1), May 1960, is the final issue of this publication. The Review was designed to furnish the intelligence community with timely interpretations of geographic problems and problem areas and to review recent maps, atlases, and other publications of geographic-intelligence value. The publication of such items will be continued in the future but as individual reports or research aids.

FOR THE ASSISTANT DIRECTOR, RESEARCH AND REPORTS:

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Chief, Publications Staff

GEOGRAPHIC INTELLIGENCE REVIEW

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CONTENTS*

Maps

* The over-all classification of this publication is CONFIDENTIAL, but some parts are of lower classification and are so indicated.

GEOGRAPHIC FACTORS AFFECTING POTENTIAL HYDROELECTRIC POWER DEVELOPMENTS IN COMMUNIST CHINA

The growth of industry in Communist China has necessitated an accompanying increase in its electric power generating capacity. During the First Five Year Plan (1953-57), electric power capacity was roughly doubled, largely through the rehabilitation and construction of thermal powerplants. During the Second Five Year Plan (1958-62) and thereafter, however, the Chinese Communists intend to rely increasingly upon hydroelectric powerplants to meet their needs for electricity.* That China has abundant hydroelectric power potential is evident from Chinese estimates based on recent hydrologic surveys of most of China's rivers and streams of a gross potential of some 580 million kilowatts, or nearly twice that of the USSR. No attempt is made here to reduce this theoretical figure to more realistic "technically possible" and "economically possible" totals.** The regional pattern of hydroelectric powersites in China and the influence of hydrologic, climatic, topographic, and locational factors on that pattern are examined, however, in order to provide a more meaningful evaluation of possible future development of these sites.

Hydrologic Factors

An evaluation of hydrologic factors -- especially the volume and duration of flow characteristic of a particular river -- has been made to determine whether or not economic development of possible hydroelectric powersites and actual power production appear feasible.

In China the hydrologic factors affecting potential hydroelectric powersites vary from highly favorable in the south to marginal in the north and northeast. The most significant factors influencing the volume and duration of river flow are probably the shape of a drainage basin and its location with respect to the prevailing pattern of precipitation. The broad, fan-shaped tributary basins of the extensive

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* The total installed capacity at the beginning of 1960 was 8.7 million kilowatts, of which hydroelectric capacity was about 1.6 million kilowatts. At the end of the Second Five Year Plan, an installed capacity of possibly 20 million kilowatts is envisaged, about 7 million of which will be derived from hydroelectric stations.

** Even if this gross figure is greatly reduced, China's potential is still far in excess of present or planned needs.

Yangtze Basin, for example, cover large areas and thus provide safeguards against large variations in stream flow during the period of high water. By contrast, rivers with long, narrow basins (such as the Mekong and Salween) and tributaries that exhibit similar characteristics are subject to considerable variations in stream flow during the high-water period. The location of the Yangtze Basin is particularly fortuitous because the broad drainage basin coincides with the normal path of many frontal storms.* Consequently, the total volume of flow of the Yangtze is by far the greatest in China.

Rivers with small watershed areas, such as the Huai or those of the Southeast Coastal Basin, tend to have high flood discharge per square kilometer of drainage area during the summer rainy season and low runoff during the spring and fall. As a result, most hydroelectric power projects along such rivers will probably have to depend upon water storage rather than river flow, with reservoirs constructed on the "safe yield" or "best dependable flow" plan based on minimum dry-year flows. Characteristically, most rivers in China, regardless of the shape of their basins or size of their watersheds, have uneven seasonal and year-to-year volumes of flow. The actual available power output in kilowatt-hours per year, therefore, will be considerably lower than indicated by figures for gross theoretical potential.

Powersite Factors

The development of hydroelectric power is limited in some places by the physical characteristics of possible sites, particularly along the lower courses of most rivers in China. The construction of dams is expensive along rivers with relatively low heads and large but variable water volumes, and construction is even more expensive if the valleys are wide and the bedrock foundations poor. Such conditions are especially pronounced along the lower courses of rivers that flow through extensive, flat plains underlain with unconsolidated alluvium such as the Yellow, Hai, Huai, Liao, Sungari, and, to a lesser extent, the Yangtze. Because of these limitations, rivers in North China, Northeast China, and East China are largely lacking sites suitable for the development of low-cost, high-yield hydroelectric power. In

* The latitudinal position of the middle and lower Yangtze Valley corresponds roughly to the east-west axis separating polar and maritime air masses during spring and early summer. Consequently, many storms are generated along this meeting ground of divergent air masses, and these low-pressure centers normally move in a northeasterly direction toward Japan -- depositing considerable rainfall during their passage.

addition, the value of developing some potential sites must be weighed against the resultant loss of agricultural land and the necessity of relocating people and industry.

Locational Factors

Locational factors are the most difficult to evaluate from the point of view of Chinese Communist planning. They include (1) the accessibility of the site for construction and other purposes; (2) transmission distances from the site to existing or planned centers of electric power consumption; (3) the location of hydroelectric power potential in relation to other sources of energy, particularly coal; and (4) multipurpose development of a site in which the generation of power may be only a minor consideration. A great many sites with high potentials -- on the upper courses of the Yangtze, Salween, Mekong, Brahmaputra, and other rivers of the interior -- are virtually inaccessible from the point of view of construction and are far removed from areas of potential consumption. At such sites, construction costs are likely to be excessive, and power transmission to existing consumption centers, even under supervoltage conditions, would probably be beyond the limits of feasibility.

If new industrial bases or power-oriented industries are constructed in the interior, however, the importance of locational factors on the development of hydroelectric power on the upper reaches of many major rivers may be lessened. Chinese planners have indicated their desire to locate new industrial bases away from the militarily vulnerable coastal areas and also to achieve a regional economic self-sufficiency by promoting a more balanced distribution of economic activity in China. Development of high-potential hydroelectric powersites in areas now sparsely populated and economically underdeveloped may thus be justified as necessary to future regional self-sufficiency.

Yangtze River Basin*

The Yangtze River and its tributaries comprise the greatest single potential source of hydroelectric power in China, contributing almost 40 percent of the national total (see Table 1). Also, the density of

* Only the major hydrographic regions of the exterior drainage system of China are discussed in the following pages. However, data for both the exterior and the interior drainage systems are included in Tables 1 and 2, which follow on pp. 4 and 5, respectively, below, and the extent of all Chinese drainage basins is shown on Map 27420, following p. 11.

[redacted]

Table 1

Gross Theoretical Hydroelectric Power Potential
of Major Hydrographic Regions of Communist China a/

Hydrographic Region	Mean Yearly Potential: Million Kilowatts b/	Mean Yearly Potential: Percent of Total	Basin Area (Square Kilometers)	Density of Gross Potential (Kilowatts per Square Kilometer) c/
Yangtze River Basin	217.15	39.9	1,808,500	120.07
South Tibetan Basin d/	117.27	21.5	438,220	267.61
Southwest China Basins e/	90.69	16.7	458,950	197.60
Yellow River Basin	32.74	6.0	745,100	43.94
Pearl River Basin f/	28.55	5.2	487,250	58.59
Southeast Coastal Basins g/	20.46	3.8	227,380	89.98
Northeast China Basins h/	18.90	3.5	896,650	21.08
Kansu-Tsinghai-Sinkiang Basins i/	17.53	3.2	3,492,710	5.02
North China Basins j/	1.22	0.2	652,980	1.87
Total	544.51	100.0	9,207,740	

a. Source: Ti-li Chih-shih (Geographical Knowledge), March 1958, p. 112. Information on the Huai, Grand Canal, Chin, and Chu Basins and the Taiwan and Hainan Islands is not included. (See Map 27420, following p. 11.)
b. Figures in the table, based on a 1958 source, indicate a total of 544.5 million kilowatts. More recent estimates place the national gross waterpower potential at 580 million kilowatts.
c. Mean yearly potential divided by basin area.
d. Including rivers draining into the Indian Ocean.
e. Including rivers west of the Pearl River system and east of the Irrawaddy.
f. Including coastal rivers between the Han Chiang at Swatow and the Pei-lyn Ho on the China-Vietnam border.
g. Including coastal rivers in Chekiang and Fukien between the Ch'ien-tang and Han Rivers.
h. Including the Amur River system and rivers draining into the Japan Sea.
i. Including the Irtysh River in northern Sinkiang and interior drainage in Kansu, Sinkiang, Inner Mongolian Autonomous Region, Tsinghai, and northern Tibet.
j. Including rivers flowing to the Gulf of Pohai.

[redacted]

Table 2

Runoff Resources of Major Hydrographic Regions of Communist China a/

Hydrographic Region b/	Basin Area		Mean Runoff (Cubic Meters per Second)	Runoff Ratio (Liters per Second/ per Square Kilometer) c/	Total Runoff	
	Square Kilometers	Percent of Total			100 million Cubic Meters	Percent of Total
Yangtze River Basin	1,808,500	18.98	32,620	18.04	10,275.30	38.71
South Tibetan Basin d/	438,220	4.60	6,855	15.64	2,160.23	8.14
Southwest China Basins e/	458,950	4.82	8,586	18.71	2,706.14	10.19
Yellow River Basin	745,100	7.82	1,545	2.07	486.68	1.83
Pearl River Basin f/	487,250	5.11	14,679	30.13	4,623.92	17.42
Southeast Coastal Basins g/	227,380	2.39	7,347	32.31	2,315.07	8.72
Northeast China Basins h/	896,650	9.41	4,258	4.75	1,342.03	5.06
Kansu-Tsinghai-Sinkiang Basins						
Northern Sinkiang	40,340	0.42	263	6.52	83.00	0.31
Kansu-Sinkiang Interior	2,017,400	21.17	2,740	1.36	863.90	3.25
Inner Mongolian Interior	448,870	4.71	380	0.85	120.00	0.45
Tsinghai-Tibet Interior	986,100	10.35	858	0.87	271.00	1.02
North China Basins i/	652,980	6.85	2,182	3.34	687.42	2.59
Huai, Grand Canal, Chin, and Chu Basins	321,100	3.37	1,947	6.06	613.64	2.31
Total	9,528,840	100.00	84,260		26,548.33	100.00

a. Source: Ti-li Chih-shih (Geographical Knowledge), March 1958, p. 112. Information on the Taiwan and Hainan Islands is not included.
b. See Map 27420, following p. 11.
c. The average runoff ratio for entire area is 8.84 liters per second per square kilometer.
d. Including rivers draining into the Indian Ocean.
e. Including rivers west of the Pearl River system and east of the Irrawaddy.
f. Including coastal rivers between the Han Chiang and Swatow and the Pei-lun Ho on the China-Vietnam border.
g. Including coastal rivers in Chekiang and Fukien between the Ch'ien-tang and Han Rivers.
h. Including the Amur River system and rivers draining into the Japan Sea.
i. Including rivers flowing into the Gulf of Pohai.

gross power potential of the Yangtze Basin is one of the highest in China, amounting to 120.07 kilowatts per square kilometer of the drainage area (see Table 1).* The Yangtze, measured at Shan-hsin, has an average volume of flow amounting to 32,620 cubic meters per second, a volume larger than that of the Mississippi River and exceeded only by those of the Amazon and Congo. Runoff of the Yangtze River Basin comprises 36.91 percent of the total for China (see Table 2), and the stability of this flow during a long high-water season -- further stabilized by water storage in the numerous lakes along the lower Yangtze -- increases the value of the Yangtze as a potential power source.**

Most of the Yangtze power potential, estimated at 217 million kilowatts, is concentrated in the middle and upper Yangtze above I-ch'ang and, to a lesser extent, at the headwaters of its tributaries above I-pin. In these stretches the rivers flow through rugged mountainous terrain.

A significantly large proportion of the power stations already in operation, under construction, or being planned are located in Szechwan, particularly in the vicinity of Chungking. A smaller number are located in Yünnan. Despite their great potential, sites within the famed gorges and canyons of the upper streams are not scheduled for immediate development, because of the magnitude of the engineering problems involved and the remoteness of such sites from present consumption centers.

In the middle Yangtze the present concentration of powerplants north and northeast of Chungking -- particularly along the Ch'ü, Chia-ling, and Fou tributaries of the Yangtze and along the Min River and its tributaries -- suggests that the more conveniently located sites of this type may well be developed before those on the main stream or the numerous sites above I-pin. The San-hsia site on the Yangtze above I-ch'ang and, in the section of the lower Yangtze between I-ch'ang and Wuhan, sites on the Yangtze tributaries -- the Lin, Yuan, Tzu, and Hsiang Rivers in eastern and southern Hunan and the Han Chiang in northern Hupeh -- are being developed to provide needed power for the growing industrial centers in the Chang-sha -- Hsiang-yang -- Wu-han

* The areal density of gross hydroelectric power potential, expressed in kilowatts per square kilometer of drainage basin, is an arbitrary index figure that facilitates the comparison of mean-flow power-generation capacity of potentially exploitable rivers.

** The Yangtze commonly is divided into three sections: the lower Yangtze, from the estuary to I-ch'ang; the middle Yangtze, from I-ch'ang to I-pin; and the upper Yangtze, above I-pin.

triangle. Although several potential sites are located in the vicinity of Tung-ting Hu and at a few places along the lower course of the river, the low head and the large volume of flow would make hydroelectric power development both difficult and costly.

Basins of Northeast China and North China*

In contrast to the high theoretical potential of the Yangtze Basin, the basins of heavily industrialized Northeast China and North China together account for less than 4 percent of the national total of gross hydroelectric power potential (see Table 1). Most of the possible powersites are located along the Yalu and Amur Rivers. The actual development rate, however, has been comparatively high, and the Northeast China Basin currently accounts for about one-third of China's hydroelectric capacity.

In Northeast China, considerable attention has been focused upon the joint development of the Amur by Communist China and the USSR, but the usability of selected sites on the Amur appears to be limited by numerous physical factors insofar as China is concerned. Most of the rivers in the Amur Basin meander across fairly wide floodplains and have few gorges and defiles; seasons of high flow are short, usually less than 150 days; and most of the yearly volume of flow occurs in the summer. Possibly even more important is the fact that rivers of the Amur Basin are frozen for about 6 months a year -- at a time when the volume is lowest. These factors, combined with the location of most of the Amur sites at the extreme limits of feasibility for transmission of electric power to present consuming centers, suggest that the development of Amur electric power for the major Manchurian industrial zones is probably not economically feasible. Moreover, most of the coal deposits of the Amur Basin are located in the Heilungkiang border area near the potential hydroelectric powersites, which raises the question of the competitive position of hydroelectric power versus steam power.**

The basins of North China -- including the watersheds of the Yalu, Liao, Luan, Hai, and other rivers draining into the Gulf of Pohai -- provide a very small proportion (0.23 percent) of the theoretical

* The drainage basins of Northeast China include those of the Amur and Tumen Rivers; North China includes the basins of the Yalu, Liao, Luan, and Hai Rivers.

** To utilize the coal available in the Amur Basin, complementary thermal-hydroelectric powerplants conceivably could be constructed, thus negating the disadvantages of the 6-month period of freezing and low water.

national power potential. The density of gross power potential of the North China Basins amounts to only 1.87 kilowatts per square kilometer of drainage basin, the lowest of any external drainage system in China. Nevertheless, important installations such as those of Kuan-t'ing and Sup-ung (shared with North Korea) contribute a significant proportion of China's total installed capacity.

Only a few sites having moderate potentials are located in North China. They share with the Amur Basin sites of Northeast China the problems of freezing, low flow in winter, uneven seasonal distribution of flow, and wide fluctuations in the volume of water from year to year. Even more critical, however, is the problem of sedimentation. The silt content of the Yung-ting Ho, for example, is one of the highest among the rivers in China, a result of the easily eroded loess that covers much of its watershed. Although it has an erosion ratio (metric tons of sediment per square kilometer of drainage basin) slightly lower than that of the Yellow River, the sediment content of the Yung-ting Ho is even higher, averaging 44,150 grams per cubic meter of water. Extensive and continuing soil-erosion and water-control measures are necessary in the upper reaches of the Yung-ting Ho to prevent the Kuan-ting reservoir from silting up rapidly.

Yellow River Basin

The distribution of potential hydroelectric powersites on the Yellow River shows to a lesser degree the same discordances with the present distribution of industry and centers of power consumption that characterize sites in the Amur Basin and the basins of North China. No hydroelectric power has been developed along the Yellow River as yet, although the aggregate projected development is greater than that planned for the Yangtze Basin. The theoretical gross potential of the Yellow River Basin, however, is estimated at about 6 percent of the Chinese total of 580 million kilowatts (see Table 1).

Sedimentation is one of the major obstacles to hydroelectric development in the Yellow River Basin because virtually all of its watershed either has a cover of short grass or consists of easily eroded loess. Almost 2,000 metric tons of soil are eroded from each square kilometer of the drainage basin per year, giving the Yellow River the highest erosion ratio of any river in China. During floods a silt content as high as 46 percent by weight has been recorded, and the river water has the appearance of a muddy paste. The projected San-men dam was designed by the Chinese Communists to permit the regulation of the out-flowing silt load and prevent excessive deposition, but its effectiveness cannot be determined until the dam is in operation. Because the control of sheet and gully erosion in the vast loessal watershed of the Yellow River is essential to the solution of the silting problems, experiments in erosion control along small tributaries should be well advanced before flood control and hydroelectric power development are attempted along the main river.

An evaluation of possible sites along the lower course* of the Yellow River indicates that, although a few small-size to medium-size potential sites exist, powerplants constructed on them would have to operate on a low head, thus making the silting problem even more serious than at the San-men Reservoir. With the improbability of adequate power development in the lower course of the Yellow River, the San-men project and the associated developments along the eastern leg of the Ordos Loop (the middle course) of the river constitute the most feasible sources of hydroelectric power for the growing industrial areas in Shensi, Shansi, and Honan. In the middle course of the Yellow River, however, the silting of reservoirs is a restrictive factor of indeterminate proportions, just as it is along the lower course.

Potential powersites above Yin-ch'uan and along the upper course of the Yellow River have fewer hydrologic problems, largely because they are located beyond the limits of the loessal area and within an area of steppe-like grassland. Although the upper course of the river has gorge sites that are technically feasible for development, the economic potential of these sites is reduced by the great distances from major existing industrial zones of northern China. Nevertheless, several hydroelectric power stations are projected or under construction in this section. The growing industrial complex centered at Lan-chou will be the principal beneficiary of these developments.

Southeast Coastal Basin and Pearl River Basin

In contrast to the low runoff of the Yellow River Basin (see Table 2) caused by the relatively low amount of precipitation compared to total evaporation, the Pearl River Basin and the Southeast Coastal Basin have the highest runoff ratios in China as a result of the great excess of precipitation over evaporation. Although the flood seasons in the two basins are brief, the water volume is great and the sediment content low. The chief hydrologic disadvantage is that the 3-month period of peak flow accounts for half of the annual volume of flow. Unlike the Yangtze Basin, neither the Pearl River Basin nor the Southeast Coastal Basin has natural lakes that can be used to store water during peak-flood periods and thus stabilize the flow.

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* For the purposes of this study, the lower course is defined as the stretch of the Yellow River below Shan-hsien; the middle course, the stretch between Shan-hsien and Lan-chou; and the upper course, that part of the river above Lan-chou.

In both basins the density of gross theoretical hydroelectric power potential is relatively low (see Table 1) despite a high flow volume and runoff ratio (see Table 2), but the potential exceeds that of the rivers of North China and Northeast China. For the Southeast Coastal Basin the gross theoretical potential accounts for less than 4 percent of the national total, and that of the Pearl River Basin for little more than 5 percent. Although most of the powersites in the two basins are rated at less than 200,000 kilowatts, the density of potential seems adequate for the probable future industrial needs of the two basins -- with the possible exception of power supply to the Shanghai area. Potential sites along the lower and middle courses of the Pearl River and its tributaries, for example, are well within 500 kilometers of the Canton area. Within the Southeast Coastal Basin, considerable development is underway along the Ch'ien-tang Chiang, and stations developed at these sites will be within economically feasible transmission distance to Shanghai and other industrial areas of the Yangtze Delta. Lack of coal in this region may also favor additional development of hydroelectric power.

Basins of Southwest China and the South Tibetan Basin*

The basins of Southwest China and the South Tibetan Basin combined possibly provide one of the largest but least useful hydroelectric potentials in China. The South Tibetan Basin has the highest and the basins of Southwest China the second highest densities of gross theoretical hydroelectric power potential in all China. Their combined gross power potential almost equals that of the Yangtze Basin (see Table 1). The significantly high densities of power potential are essentially a result of the rugged terrain through which the rivers of the two basins flow. The V-shaped, gorge-like valleys and steep gradients of rivers such as the Mekong, Salween, Red, Brahmaputra, and other rivers in southwestern China afford ample physical opportunities for large-scale hydroelectric power development. As Map 27420 indicates, nearly all sites along the major rivers have power potentials in excess of 1 million kilowatts, and a number of sites along the bend of the Brahmaputra are rated as high as 5 million kilowatts. The ruggedness of the terrain, however, contributes to the isolation and inaccessibility of these basins, compounding the difficulties of developing the hydroelectric power potential and of transmitting power long distances to centers of power consumption. This applies particularly to sites along the upper reaches of the Mekong, Salween, and Brahmaputra. The development of more accessible sites in the

* The basins of Southwest China and the South Tibetan Basin include those portions of the Mekong, Salween, Red, and Brahmaputra Rivers and their tributaries that lie within China.

southwestern part of the Yangtze Basin, such as the site of the I-li Ho project, will satisfy present needs and postpone the need for any large-scale exploitation of the power potential of Southwest China.

Conclusions

The hydroelectric power resources of Communist China have great regional variations. In the major industrialized areas of North China, Northeast China, and East China, potential hydroelectric sites are few and are generally unsuited for high-kilowatt-capacity power stations. Ironically a high proportion of the total hydroelectric potential is located in largely inaccessible regions of Southwest China, far removed from present centers of power consumption. Some of the planned stations in northern China, such as those at Kuan-t'ing and San-men, are faced with the serious problems of rapid silting of reservoirs owing to the loessal soils and lack of vegetation in the watersheds of this region.

Comparison of the hydroelectric potential of individual river basins or hydrographic regions with the total gross potential is not very meaningful, because (1) China's gross theoretical potential is so great and because (2) its present needs and those in the near future can be met by development of only a small fraction of this potential and an expanded capacity of existing thermal plants. The potential in Southeast China, for example, which is but 3.80 percent of the gross potential, amounts to the relatively impressive total of about 20 million kilowatts. Assuming that only 10 million kilowatts could be economically produced, the amount would still be about six times the present installed capacity from hydroelectric stations. Unexploited sites in Southwest China and other remote areas may be utilized to some extent in the future in conjunction with the eventual development of new industrial bases in the interior. Future technological advances in the transmission of electricity and the eventual development of an integrated national power grid may also tend to alleviate the present regional imbalances of power potential and consumption.

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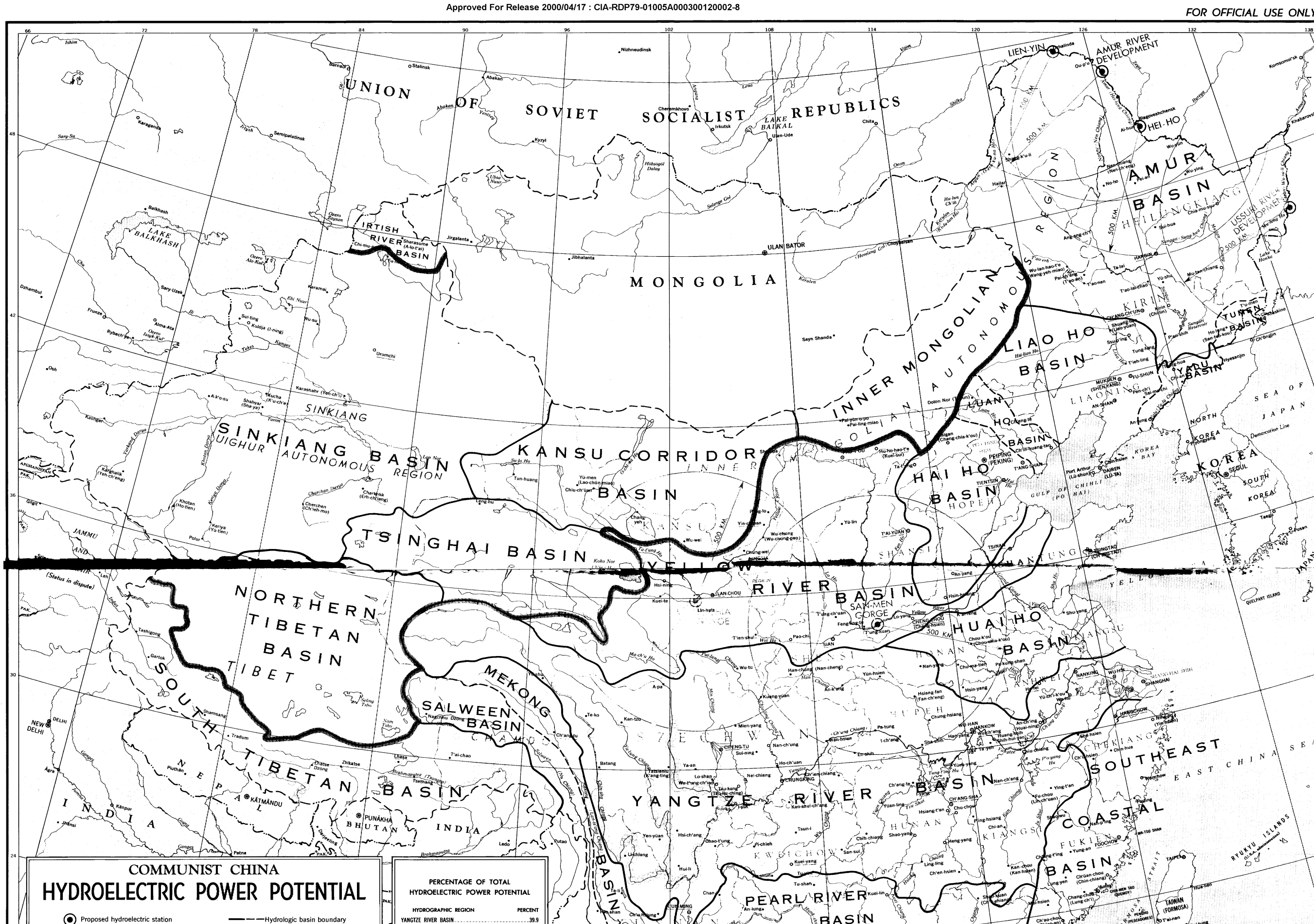

IRRIGATION AGRICULTURE IN SOVIET CENTRAL ASIA

As part of the effort to increase over-all agricultural production, the USSR has undertaken to expand irrigation agriculture, particularly in Soviet Central Asia.* Although the irrigated land of Soviet Central Asia constitutes only about 2 percent of the total cultivated land of the USSR, it comprises an internal source of cotton and subtropical specialty crops that can be grown in few other parts of the country.** About 90 percent of the Soviet production of cotton is concentrated in Central Asia, as well as important percentages of key industrial crops such as sugar beets, jute, hemp, and kenaf. The region also produces significant quantities of alfalfa, hybrid seed corn, fruit, and vegetables. Throughout most of Soviet Central Asia, irrigation agriculture has long been the basis of the local economy. As the area under irrigation is expanded and as Soviet requirements for cotton and other subtropical crops increase, even greater emphasis on irrigation agriculture can be expected.

Development of Irrigation Agriculture

Irrigation agriculture was extensively developed in Central Asia well before the Russian Revolution. In 1913 the irrigated acreage totaled 7,359,000 acres. Thereafter, the acreage under irrigation decreased sharply as a result of damage during the revolution and a particularly severe flood in 1921. Subsequent land reforms and reallocation of water priorities also contributed temporarily to the decrease. By 1923 the amount of irrigated land in Soviet Central Asia had decreased to 4,119,000 acres, or 56 percent of the 1913 total. By 1928, however, the acreage of irrigated land again reached its prerevolutionary level. During the period of the Five Year Plans, the acreage continued to increase steadily, and by 1957 the amount of irrigated land in Soviet Central Asia reached an all-time high of 12,111,000 acres,*** or 68 percent of the irrigated land in the USSR.

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* For the purposes of this study, Soviet Central Asia includes the five southern oblasts of Kazakh SSR -- Kzyl-Ordinskaya, Yuzhno-Kazakhstanskaya, Dzhambulskaya, Alma-Atinskaya, and Taldy-Kurganskaya -- and all of the Uzbek, Kirgiz, Tadzhik, and Turkmen SSR's.
** See Map 28722, following p. 19.
*** This figure refers to land actually irrigated. Soviet statistics include two classifications of land devoted to irrigation agriculture: (1) land with an irrigation network and (2) irrigated land. These categories are often confusingly interchanged [footnote continued on p. 14]

During the pre-World War II period, attention was devoted to both the reconstruction of obsolete irrigation systems and the construction of new canals and reservoirs. Many new irrigation systems were constructed on the Amu-Dar'ya, Syr-Dar'ya, Chu, and other rivers. As early as 1931, work was initiated on the Vakhsh system in the Tadzhik Republic, a major construction project that was completed in 1939. Another impressive irrigation project completed in 1939 is the 171-mile-long Bol'shoy Fergana Canal. This canal insured an adequate water supply for 1,235,500 acres and increased the amount of irrigated land in the Fergana Valley by 155,700 acres. During World War II, two parallel canals -- the Severnyy (Northern) and the Yuzhnyy (Southern) -- were constructed to supplement the Bol'shoy Fergana. Much work was also done in the Golodnaya Steppe,* where the Kirov and Bayaut Canals were modernized and the Farkhad regulatory dam was constructed. Other notable accomplishments were the construction of the Bol'shoy Chu Canal in northern Kirgiz SSR and the Gissar Canal in Tadzhik SSR.

The major irrigation projects completed during the post-World War II period include (1) the Katta-Kurgan Reservoir in the Zeravshan Valley of the Uzbek Republic, which provides for the extension of irrigation to 161,000 acres of new land; (2) the Chimkurganskoye Reservoir in Kashka-Dar'yinskaya Oblast' of Uzbek SSR; (3) reservoirs on the Tedzhen and Murgab Rivers in Turkmen SSR; (4) the Kzyl-Ordinskoye Reservoir on the Syr-Dar'ya in southern Kazakh SSR; (5) the Urta-Tokayskoye Reservoir in Andizhanskaya Oblast'; (6) the Orto-Tokoyskoye Reservoir in the Kirgiz Republic, which regulates the flow of the Chu River and supplies water for 287,000 acres in the Chu Valley; and (7) the Kayrak-Kum Reservoir on the Syr-Dar'ya west of Leninabad in the neck of the Fergana Valley, which provides water not only for the adjacent land but also for portions of the Golodnaya Steppe farther downstream. In addition to the reservoirs, the Iski-Angara Canal was completed in 1958; it leads from the Zeravshan River to the Kashka-Dar'ya, a distance of 112 miles, and helps regulate the flow of the Zeravshan River.

The most outstanding project currently underway is the Kara-Kum Canal, which will extend from the Amu-Dar'ya above Kerki in the Turkmen

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in Soviet sources. Land with an irrigation network includes fallow and non-utilized land and land that is cultivated but not irrigated. The figures for land with an irrigation network are significantly larger than those for land that is irrigated.

* The Golodnaya Steppe referred to in this study lies southwest of Tashkent. In the past the area west of Lake Balkhash was also known as the Golodnaya Steppe, but the preferred current usage for the name of this area is Betpak-Dala.

Republic westward to Archman, west of Ashkhabad, a distance of 325 miles. The first section, which was recently completed, leads westward from the Amu-Dar'ya to Mary, a distance of about 250 miles. Eventually this canal will divert one-fifth of the flow of the Amu-Dar'ya and will provide sufficient water to irrigate 1,112,000 acres of land in southern Turkmen SSR. About 125 miles of canal are also currently under construction to distribute water from a recently completed reservoir on the Bugun' River.

Other recent developments include the large Chardar'inskoye Reservoir, which is under construction on the Syr-Dar'ya west of Tashkent and will provide irrigation water for 250,000 acres in southern Kazakh SSR and Uzbek SSR. Efforts are also being made to increase the water supply in the Arys'-Turkestan area of southern Kazakhstan, and work has been started on the Ak-Bura dam in southern Kirgiz SSR, which will insure irrigation water for 148,000 acres.

Plans for the more distant future call for the construction of a 340-mile-long canal from the Amu-Dar'ya below Kerki to the Zeravshan River at a point east of Bukhara in the Uzbek Republic. It is anticipated that, when this canal is completed, the land under irrigation in the Zeravshan Basin can be increased by more than 2.5 million acres and that more water can be diverted to the Kashka-Dar'ya.

Distribution of Irrigated Crops

The rapid development of irrigation systems has been accompanied by a high degree of agricultural specialization in Soviet Central Asia, which in turn has affected crop-distribution patterns. The trend toward increasing specialization on cotton on irrigated land, which was initiated under the Czarist regime, has been greatly intensified by the Soviet government. The cotton acreage in Soviet Central Asia has increased from 19 percent of the total irrigated area in 1913 to over 38 percent in 1957, making cotton the most important crop in the region. In 1958, Soviet Central Asia accounted for nearly 90 percent of the cotton acreage of the USSR, and Uzbek SSR alone for 65 percent.

Cotton is generally grown on the best land, where the water supply is adequate and stable. About 76 percent of the land sown to cotton is concentrated in the Fergana, Zeravshan, and Lower Amu-Dar'ya Valleys and in the Tashkent Region -- some 30 percent in the Fergana Valley alone. Also important, particularly for long-staple cotton, are southwestern Tadzhik SSR, the Surkhan-Dar'ya Region, and southern Turkmen SSR, which together account for about 15 percent of the cotton acreage.

Alfalfa, the chief rotation crop for cotton, ranks second to cotton in acreage, occupying about 20 percent of the irrigated land. Nearly all the alfalfa is harvested as hay, the greatest production being in the Uzbek and Kirgiz Republics.

Small grains, primarily wheat but also some rice, rank next to alfalfa in acreage, occupying an estimated 18 percent of the irrigated land.* Wheat is grown principally in areas where irrigation water is insufficient for cotton or in areas such as the Chu and Ili River valleys, where marginal climatic conditions create economic hazards for the growing of cotton. Other areas of extensive wheat growing are the Fergana, Kashka-Dar'ya, and Lower Amu-Dar'ya Valleys as well as the Tashkent Region and the southern part of Turkmen SSR. Between 1940 and 1958, irrigated wheat acreages in Soviet Central Asia were greatly reduced, and further reduction can be expected as water supplies are improved and wheat is supplanted by cotton and corn. The main rice growing areas are the Tashkent Region, the Fergana Valley, and the Lower Syr-Dar'ya Valley. In addition to small grains, corn is grown on about 5 percent of the irrigated land, primarily in the Chu and Fergana Valleys.

Among the minor irrigated crops are melons, potatoes, and other vegetables, which together occupy about 5 percent of the irrigated land. Throughout the region they are grown in the vicinity of larger cities. Fodder crops, principally corn silage and root crops, occupy about 6 percent of the irrigated land, and 2 percent is in orchards and vineyards, which are widespread. Miscellaneous crops, including the production from private farm plots, occupy about 6 percent of the irrigated acreage and include sugar beets, jute, hemp, and kenaf.

Irrigation Potential of Soviet Central Asia

Considerable extension of the irrigated acreage is planned for Soviet Central Asia, in both the near and the distant future, but only limited information has been published on planned increases during the new Seven Year Plan (1959-65). However, work undertaken and

* Acreages specified as irrigated were available only for cotton, orchards, and vineyards. However, since all alfalfa, corn, rice, potatoes, and other vegetable crops, fodder crops, and industrial crops, except corn in Kirgiz SSR and flax in Tadzhik SSR, are known to be grown under irrigation, the acreages for these crops are accepted as irrigated acreages. Irrigated acreages for small grains are the most difficult to determine because they are grown on both irrigated and unirrigated land and because detailed acreage data are lacking. However, because irrigated acreages can be established for nearly all other crops and miscellaneous agricultural uses, it is estimated that the remainder of the total irrigated land is devoted to small grains.

carried out under the now-defunct Sixth Five Year Plan (1956-60) provides a good indication of immediate intentions (see Table 1).

Table 1

Planned Expansion of Irrigated Land in Soviet Central Asia

Acres

Republic	Sixth Five Year Plan (1956-60)	Seven Year Plan (1959-65)
Uzbek	803,000	1,235,000
Kazakh	529,000	(No data available)
Turkmen	507,000	385,000
Kirgiz	284,000	269,000
Tadzhik	220,000	358,000 to 387,000

For the Uzbek Republic, expansion during the 1956-60 period was planned primarily for the Golodnaya Steppe and the Zeravshan Valley. The Kazakh portion of the Golodnaya Steppe and the Arys'-Turkestan area were to account for most of the acreage increase in Kazakh SSR. In the Turkmen Republic the planned increase was associated primarily with the construction of the Kara-Kum Canal. A considerable increase in land under irrigation in Kirgiz SSR has already been accomplished as a result of the completion of the Orto-Tokoyskoye Reservoir in 1958. Most of the planned increase in Tadzhik SSR was scheduled for the areas adjacent to the Kayrak-Kum Reservoir and the Vakhsh Valley. Despite the cancellation of the Sixth Five Year Plan, these projects are being carried forward, and much of the planned acreage increases will probably be realized or, in some areas, extended during the current Seven Year Plan.

In contrast to the 12.1 million acres under irrigation in 1957, Soviet planners estimate that about 46 million acres of land in Soviet Central Asia are suitable for irrigation (see Table 2*). The basin of the Amu-Dar'ya accounts for 24.7 million acres; the basin of the Syr-Dar'ya, 13 million; and the rivers on the northern slope of the Tyan'-Shan Mountains, 11.2 million. If the amount of land scheduled for irrigation under the current Seven Year Plan is added to that already under irrigation, the total would be less than one-third of the potentially irrigable land.

On this basis, irrigation in Soviet Central Asia, even at the end of the Seven Year Plan, will still be considerably underdeveloped because the average annual river flow in recent years has been nearly

* Table 2 follows on p. 18.

Table 2

Distribution of Irrigated and Irrigable Land in Soviet Central Asia

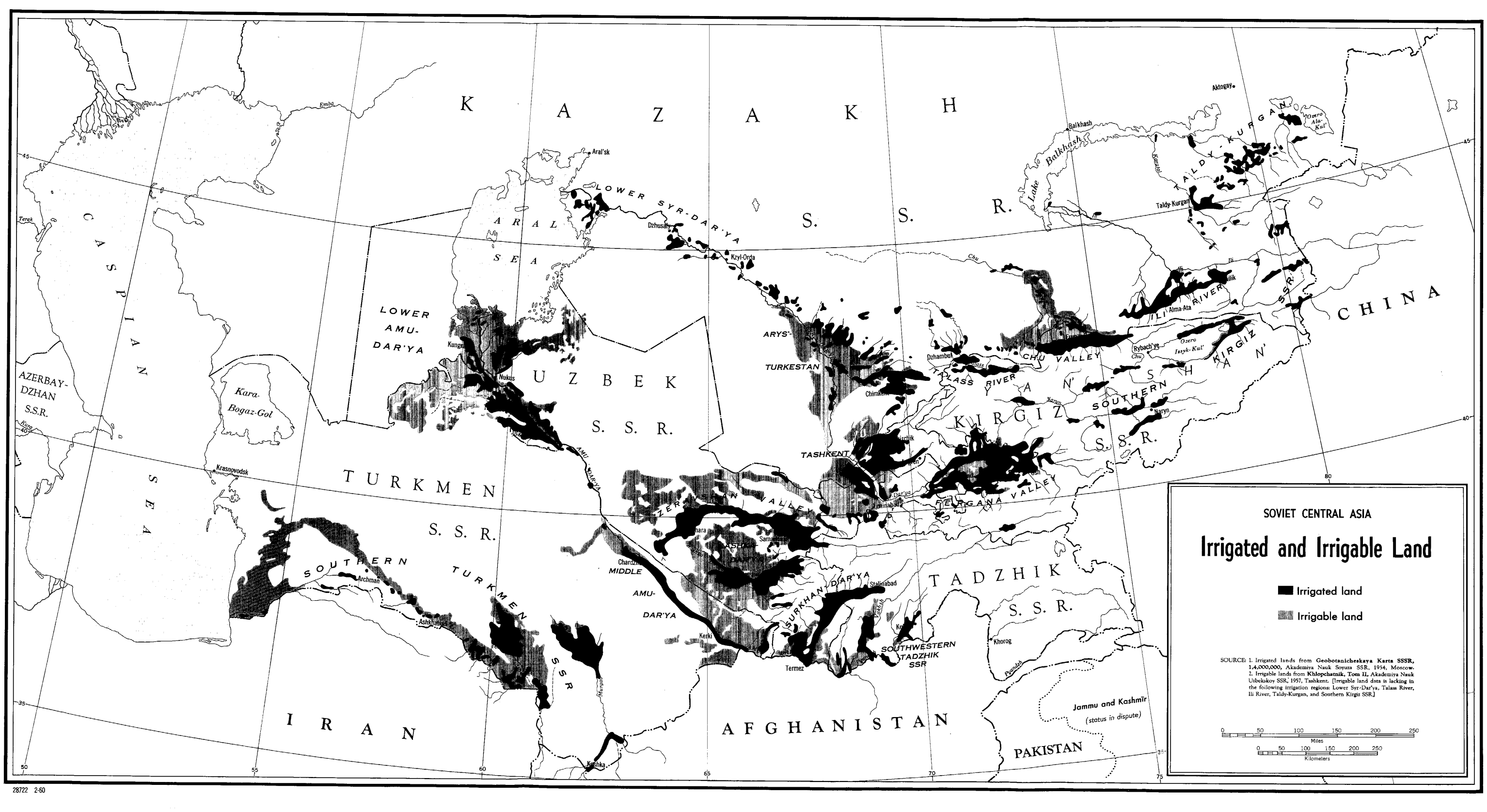
		Acres
Republic	Irrigated in 1957	Irrigable
Uzbek	5,636,000	16,025,000
Kazakh	2,603,000	12,819,000
Kirgiz	2,033,000	2,393,000
Turkmen	983,000	13,590,000
Tadzhik	850,000	1,077,000
Total	12,105,000	45,905,000

three times that required for the planned irrigation. In spite of this surplus, significant acreages within irrigation networks are not irrigated, because of local lack of water. In 1955 a total of 3,108,500 acres of land within irrigation projects in Soviet Central Asia were not irrigated -- chiefly along the Tedzhen and Murgab Rivers in Turkmen SSR, along the Kashka-Dar'ya in Uzbek SSR, and in the Arys'-Turkestan area of Kazakh SSR. At present, most of the irrigation water of Soviet Central Asia is drawn from the smaller rivers, many of which are already completely utilized for irrigation. Thus the extension of irrigation will be hampered by the problem of local water shortages until more distant sources can be tapped.

The larger Amu-Dar'ya and the Syr-Dar'ya, on the other hand, are not being used extensively for irrigation. Only 15 to 17 percent of the flow of the Amu-Dar'ya was used as of 1955, and the percentage for the Syr-Dar'ya was even less. Plans for future large-scale development of irrigation in Soviet Central Asia call for almost complete use of the water from these two rivers. This, in turn, requires the construction of expensive, long-distance diversionary canals, such as the 325-mile-long Kara Kum Canal, to carry water to irrigable regions located at great distances from these rivers. Under the Seven Year Plan the construction of many of the additional reservoirs and canals needed is projected and should alleviate some of the current water-supply problems.

Prospects for the Future

On the basis of water supply available, current Soviet plans for the development of irrigation in Soviet Central Asia appear, on the whole, to be both realistic and attainable. Furthermore, the climate of the land scheduled for irrigation permits the production of much-needed specialty crops that are essential to the Soviet economy but cannot be grown in large quantities in other parts of the USSR. Thus the role of Soviet Central Asia seems likely to become increasingly significant. The future of irrigation, however, will be predicated largely upon the willingness of the government to meet the high costs of constructing reservoirs for storing water and canals for distributing the water to irrigable land, in many cases located hundreds of miles from the source of irrigation water.


SOVIET CENTRAL ASIA
Irrigated and Irrigable Land
Irrigated land
Irrigable land
SOURCE: 1. Irrigated lands from Geobotanicheskaya Karta SSSR, 1,4,000,000, Akademiya Nauk Soyuza SSR, 1954, Moscow. 2. Irrigable lands from Khlopchatnik, Tom II, Akademiya Nauk Uzbekskoy SSR, 1957, Tashkent. [Irrigable land data is lacking in the following irrigation regions: Lower Syr-Dar'ya, Talass River, Ili River, Taldy-Kurgan, and Southern Kirgiz SSR.]
Miles
Kilometers
K A Z A K H S. S. R.
ARAL SEA
CASPIAN SEA
LOWER SYR-DAR'YA
LOWER AMU-DAR'YA
U Z B E K S. S. R.
T U R K M E N S. S. R.
SOUTHERN TURKMEN SSR
MIDDLE AMU-DAR'YA
SURKHAN-DAR'YA
SOUTHWESTERN TADZHIK SSR
T A D Z H I K S. S. R.
K I R G I Z S. S. R.
SOUTHERN KIRGIZ SSR
TALDY-KURGAN
ILI RIVER
CHU VALLEY
TALASS RIVER
FERGANA VALLEY
ARYS'-TURKESTAN
TASHKENT
CHINA
IRAN
AFGHANISTAN
PAKISTAN
AZERBAY-DZHAN S.S.R.
Kara-Bogaz-Gol
Lake Balkhash
Jammu and Kashmir (status in dispute)
Aral'sk
Dzhusaly
Kzyl-Orda
Aktogay
Balkhash
Taldy-Kurgan
Alma-Ata
Ozero Issyk-Kul'
Ozero Ala-Kul'
Rybach'ye
Chimkent
Nukus
Krasnovodsk
Ashkhabad
Chardzhou
Stalinabad
Termez
Khorog

28722 2-60

NEW ADMINISTRATIVE DIVISIONS OF CZECHOSLOVAKIA

A major reorganization of the administrative divisions of Czechoslovakia, the first since January 1949, was recently approved by the Plenum of the Central Committee of the Czechoslovak Communist Party (CCCP). The reorganization includes all administrative divisions and affects the status of some cities and towns. The basic administrative organizational breakdown of kraj (region), okres (district), and obec (commune), however, remains unchanged. Allegedly the paramount reasons for the change in the administrative divisions were economic. It is highly probable that, because the proposed revision affects the Party organizational structure, political factors also were instrumental in the agitation for reorganization. Economic-political administrative regions,* each characterized by a certain specialization within the framework of the national economy, have been established. Simultaneously, changes have been proposed in the Party organizational structure in accordance with the new administrative organization and the economic tasks delegated to Party units. Although the administrative revision was approved by the CCCP in early 1960, it was not officially approved by the National Assembly until 9 April. Such approval generally is a "rubber stamp" procedure. Opposition to the reorganization includes some Party political administrative personnel, but they have been scored for their reticence in accepting the reorganizational proposal.

Previous Administrative Reorganizations

At the end of World War II, Czechoslovakia reconstituted its prewar administrative divisions as follows:

Order	Czechoslovak Term	English Equivalent
1st	Země	Land or Province
2d	Správní Okres	Administrative District
	Samosprávné Město (Soudní Okres)	Autonomous City (Judicial District)
3d	Obec	Commune

* The concept and formation of economic-territorial regions originated in the USSR and has been copied in some of the satellite countries. In 1957 the USSR effected a reorganization of industrial management through the creation of economic-administrative regions. It is not known what specific gains were anticipated in Albania by a 1958 administrative reorganization that established new oblasti or by similar measures in Bulgaria in 1959.

Under this postwar administrative revision, there were three first-order divisions -- Bohemia (Čechy), Moravia-Silesia (Morava a Slezsko), and Slovakia (Slovensko) -- and 244 správní okresy. For a few cities in the Czech Lands the additional term venkov was used to distinguish the správní okres from the samosprávné město that it surrounded, because the two bore the same specific place name. The city of Plzeň (Pilsen), for example, was called Plzeň-město (Plzeň city) and the surrounding okres, Plzeň-venkov (Plzeň rural). In Slovakia the term okolie, synonymous with venkov, was used similarly.

Effective 1 January 1949, a revolutionary administrative reorganization eliminated the three země and formed 19 kraje (regions), administrative units of a new type. In some cases, boundaries of these new units cut across the boundaries of former země and okresy. The most striking change was the obliteration of the centuries-old boundary between Bohemia and Moravia by the consolidation of Bohemia and Moravia-Silesia into a single země -- Čechy Země (Czech Lands). The Slovak země boundary, on the other hand, was not affected; and Slovensko (Slovakia) retained its semiautonomous administrative position. Thus Czechoslovakia actually was divided into the Czech Lands and Slovakia. The administrative reform of 1949 also established several new okresy, abolished others, and changed the administrative seat of some (thereby changing the okres name). The administrative units resulting from the 1949 revision were as follows: first order, kraj; second order, okres and statutárné město (statutory city, the same as the previous samosprávné město); and third order, obec (commune, plural obci). The peculiar, semiautonomous position of Slovakia and its capital, Bratislava, was not explained.

Administrative Reorganization of 1960

The necessity for more direct control over the economy purportedly is the principal reason for the current reorganization. A number of committees -- whose members included geographers,* economists, and trade unionists -- were formed to investigate the possibilities of establishing economic regions (oblasti). The broad scope of the resultant administrative reorganization** can be seen by the fact that it (1) reduced the number of kraje from 19 to 10 and established new

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* Miroslav Blažek, economic geographer, lecturer at the Economic College, and author of Hospodářský Zemepis Ceskoslovenska (Economic Geography of Czechoslovakia), probably was instrumental in presenting the geographical aspects of the problem to one of the committees. In 1956 and 1957 Czechoslovakia sponsored the Sov Bloc Conference of Economic Geographers, a conference established primarily for the discussion of economic regionalism.

** See Map 28795, following p. 25.

kraje with new names; (2) reduced the number of okresy from 270 to 108; (3) realigned boundaries, in some cases cutting across former kraje and okresy; (4) established new administrative seats for the newly formed okresy, thereby changing some okres names; and (5) changed the administrative status of some cities. Geographically the Czech Lands will consist of 7 kraje and 75 okresy (formerly 13 and 179, respectively), and Slovakia will have 3 kraje and 33 okresy (formerly 6 and 91, respectively). This reduction was accomplished by the consolidation of some existing kraje (for example, Košice and Prešov) and by the dissolution of others (for example, Jihlava, Gottwaldov, and Karlovy Vary) and the incorporation of their territory into adjacent divisions (see Map 28795). The boundaries of the new kraje illustrate the emphasis given to the economic orientation of the okresy in the new administrative breakdown.

The reduction in the number of okresy has been accomplished through the amalgamation of former units -- entire okresy or parts of several -- into new okresy. Žiar nad Hronom Okres, for example, includes three former okresy. The four okresy that formerly were part of Pražský Kraj have been combined into two, Praha-východ (Prague-east) and Praha-západ (Prague-west). The term venkov (rural) is retained to distinguish the administrative okres from the city with okres status having the same name, such as Bratislava-venkov and Bratislava-město. The okresy are named after their administrative centers. Except for the city of Žiar nad Hronom, which had no previous administrative function, the new okres centers are all former okres or kraj centers (see Map 28795).

Prague retains its kraj status and has been divided into 10 obvody (districts, formerly 19) that have okres status. Bratislava, although formerly of equal rank, is now an okres, an administrative status comparable to that of Brno, Ostrava, and Plzeň.

Within the Czech Lands the new economic-administrative kraje are as follows:

1. Středočeský Kraj (Central Bohemian Region), with its administrative center at Prague, encompasses the area formerly identified as Pražský Kraj, and thus comprises the same economic region.

2. Jihočeský Kraj (South Bohemian Region), with its administrative center at České Budějovice, consists of the area that was formerly Českobudějovický Kraj and parts of Jihlavský, Plzeňský, and Pražský Kraje. Blatná Okres, which was in Plzeňský Kraj but economically oriented to Strakonice in the former Českobudějovický Kraj, was included with the latter kraj when the new regions were delimited.

3. Západočeský Kraj (Western Bohemian Region), with its administrative center at Plzeň, is comprised mostly of the former Plzeňský and Karlovarský Kraje. The economy of the region is based on the engineering industry centered at Plzeň. Coal to meet the industrial requirements is available from local mines and also from districts such as the Sokolov Basin in the former Karlovarský Kraj.

4. Severočeský Kraj (Northern Bohemian Region), with its administrative seat at Ústí nad Labem, consists primarily of the former Ústecký Kraj and parts of Liberecký and Karlovarský Kraje. The diversified economy of this new region is centered on light industries (glass, ceramics, and textiles), chemicals, engineering, and mining near Ústí nad Labem, Chomutov, Liberec, and Most. Kadaň and Podbořany Okresy, formerly in Karlovarský Kraj but economically oriented with Ústecký Kraj, were incorporated into this region rather than into Západočeský Kraj, into which most of Karlovarský Kraj was incorporated.

5. Východočeský Kraj (Eastern Bohemian Region), with its administrative seat at Hradec Kralove, incorporates all or parts of Hradecký, Pardubický, Jihlavský, Liberecký, and Brněnský Kraje. The diverse economy of the region includes light and heavy industries and agriculture. Of national importance are the chemical plants and oil refinery in the Pardubice area.

6. Jihomoravský Kraj (Southern Moravia Region), with its center at Brno, includes Brněnský, Jihlavský, Gottwaldovský, and Olomoucký Kraje. The economy is centered on the engineering industry at Brno, Gottwaldov, and Žd'ar nad Sazavou. The region includes other industries of less importance.

7. Severomoravský Kraj (Northern Moravia Region), with its center at Ostrava, encompasses territory from three former <u>kraje</u> -- all of Ostravský, large parts of Olomoucký, and some districts of Gottwaldovský. Heavy industry (steel and chemical) centered at Ostrava, coal mining, and light industry form the basis of the economy of this region.

The administrative reorganization in Slovakia was accomplished by merging the six existing <u>kraje</u> into three, with a minimum of boundary changes. The centralization of administration in Prague and the consequent subjugation of Bratislava contribute to the steady erosion of the semiautonomous position of Slovakia within the Czechoslovak state. The new kraje in Slovakia are as follows:

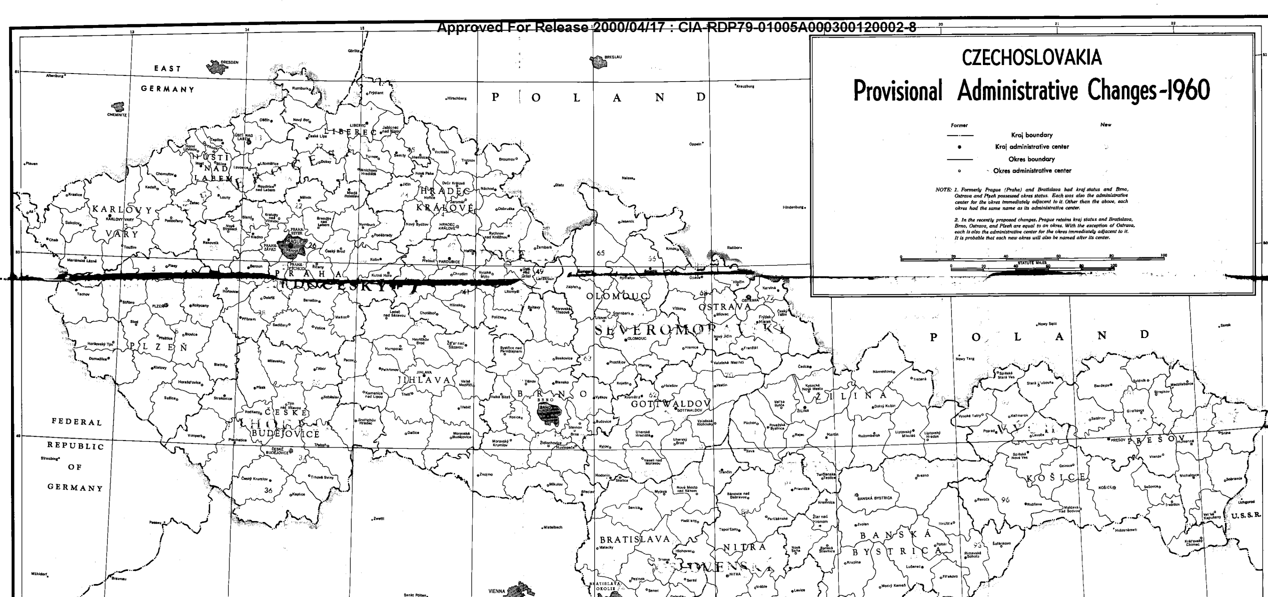
1. Západoslovenský Kraj (Western Slovakia Region), with its seat at Bratislava, encompasses the area formerly identified as Bratislavský and Nitrianský Kraje. The development of the Váh Valley is expanding the industrial capacity of the region. Bratislava (chemical plants, petroleum refineries, machine-building plant), Komarno (shipbuilding), and Dubnica nad Váhom (armaments) are important industrial centers. Western Slovakia is also an important corn, tobacco, and vineyard region.

2. Středoslovenský Kraj (Central Slovakia Region), with its administrative seat at Banská Bystrica, comprises the former Banskobystrický and Žilinský Kraje. The diverse economy of the region is based on mining and quarrying, heavy industries, and forestry.

3. Východoslovenský Kraj (Eastern Slovakia Region), with its administrative seat at Košice, comprises the former Košický and Prešovský Kraje. The economy of the region is based primarily on agriculture, light industry, and mining. Mining (iron ore, manganese ore, copper, and magnesite), chiefly in the Slovenske Rudohorie, employs about one-fourth of the total labor force of the region.

Conclusions

The establishment of the economic-administrative regions, the related structural changes in the Party, and the shift of daily policy-making decisions to the okres level may help to increase over-all economic production. The ultimate economic gain will depend largely on the selection and placement of qualified personnel to fill the new administrative positions. The 1960 reorganization will release many trained administrators, including some with agricultural backgrounds who could be placed in the relatively static agricultural sector of the economy. Changes of this sort will give the central government tighter and more efficient control over the economic and political situation by streamlining the burdensome, over-staffed, and bureaucratic administrative hierarchy and thus forcing personnel into economically productive activities.



CZECHOSLOVAKIA
Provisional Administrative Changes-1960

Former — New

Kraj boundary

Kraj administrative center

Okres boundary

Okres administrative center

NOTE: 1. Formerly Prague (Praha) and Bratislava had kraj status and Brno, Ostrava and Plzeň possessed okres status. Each was also the administrative center for the okres immediately adjacent to it. Other than the above, each okres had the same name as its administrative center.

2. In the recently proposed changes, Prague retains kraj status and Bratislava, Brno, Ostrava, and Plzeň are equal to an okres. With the exception of Ostrava, each is also the administrative center for the okres immediately adjacent to it. It is probable that each new okres will also be named after its center.

STATUTE MILES

ADMINISTRATIVE DIVISIONS

ZÁPADOČESKÝ KRAJ
Center—Plzeň
Okresy
1. Cheb
2. Sokolov
3. Karlovy Vary
4. Tachov
5. Plzeň-sever
6. Rokycany
7. Domažlice
8. Plzeň-jih
9. Klatovy

SEVEROČESKÝ KRAJ
Center—Ústí nad Labem
Okresy
10. Chomutov
11. Most
12. Teplice
13. Ústí nad Labem
14. Děčín
15. Louny
16. Litoměřice
17. Česká Lípa
18. Liberec
19. Jablonec

STŘEDOČESKÝ KRAJ
Center—Praha
Okresy
20. Rakovník
21. Kladno
22. Mělník
23. Mladá Boleslav
24. Beroun
25. Praha-západ
26. Praha-východ
27. Nymburk
28. Příbram
29. Benešov
30. Kolín
31. Kutná Hora

JIHOČESKÝ KRAJ
Center—České Budějovice
Okresy
32. Prachatice
33. Strakonice
34. Písek
35. Tábor
36. Český Krumlov
37. České Budějovice
38. Jindřichův Hradec
39. Pelhřimov

VÝCHODOČESKÝ KRAJ
Center—Hradec Králové
Okresy
40. Havlíčkův Brod
41. Chrudim
42. Pardubice
43. Hradec Králové
44. Jičín
45. Semily
46. Trutnov
47. Náchod
48. Rychnov nad Kněžnou
49. Ústí nad Orlicí
50. Svitavy

JIHOMORAVSKÝ KRAJ
Center—Brno
Okresy
51. Jihlava
52. Třebíč
53. Znojmo
54. Žďár nad Sázavou
55. Brno-venkov
56. Blansko
57. Břeclav
58. Hodonín
59. Vyškov
60. Uherské Hradiště
61. Gottwaldov
62. Kroměříž
63. Prostějov

SEVEROMORAVSKÝ KRAJ
Center—Ostrava
Okresy
64. Olomouc
65. Šumperk
66. Bruntál
67. Přerov
68. Opava
69. Nový Jičín
70. Vsetín
71. Frýdek-Místek
72. Karviná

ZÁPADOSLOVENSKÝ KRAJ
Center—Bratislava
Okresy
73. Senica
74. Bratislava-venkov
75. Dunajská Streda
76. Komárno
77. Galanta
78. Nové Zámky
79. Trnava
80. Nitra
81. Levice
82. Topol'čany
83. Trenčín

STŘEDOSLOVENSKÝ KRAJ
Center—Banská Bystrica
Okresy
84. Považská Bystrica
85. Prievidza
86. Žiar nad Hronom
87. Zvolen
88. Lučenec
89. Žilina
90. Čadca
91. Martin
92. Banská Bystrica
93. Rimavská Sobota
94. Liptovský Mikuláš
95. Dolný Kubín

VÝCHODOSLOVENSKÝ KRAJ
Center—Košice
Okresy
96. Rožňava
97. Poprad
98. Spišská Nová Ves
99. Košice
100. Prešov
101. Bardejov
102. Humenné
103. Michalovce
104. Trebišov

AGRICULTURAL MAP OF MOSKOVSKAYA OBLAST'*

Soviet authorities have just issued a new (1959) agricultural map that may well be the prototype of a useful map series. Moskovskaya Oblast': Karta Sel'skogo Khozyaystva (Moskovskaya Oblast': Map of Agriculture)** at the scale of 1:600,000 is the only available postwar medium-scale Soviet map that is devoted specifically to the agriculture of a single oblast. Previous maps depicting the agricultural pattern of Moskovskaya Oblast' are available, but they are at much smaller scales and almost all of them are economic maps and treat the oblast as part of some larger area such as the Central Industrial Region. On these earlier maps the simplified agricultural patterns tend to be lost in the complexities involved in the attempt to show all facets of the economy. In the new map, however, the agricultural features show through clearly. The inclusion of deposits of peat, phosphorites, and limestones might be regarded as extraneous, but even these deposits bear some relation to agriculture.

The map summarizes a vast amount of agricultural information about Moskovskaya Oblast'. The three basic types of agricultural specialization in the oblast are differentiated by distinctive colors indicating (1) vegetables, milk, and meat; (2) flax, milk, and meat; and (3) grains. An interesting attempt is made to show the difference in productivity of the various parts of the oblast. Because potatoes are grown almost everywhere throughout the oblast, production of potatoes is used as a common denominator for an index of land productivity. Distinctive tones are used to categorize the 1957-58 production of potatoes per 100 hectares of tillable land on collective farms as (1) less than 300 centners, (2) between 300 and 1,000 centners, or (3) more than 1,000 centners.

Every collective farm (kolkhoz), state farm (sovkhoz), equipment and repair station (remontno-tekhnicheskaya stantsiya), and meadow improvement station (lugomeliorativnaya stantsiya) within the oblast is located and named on the map, and quantitative data concerning the collective and state farms are indicated by various combinations of symbols, styles of type, and colors used for the names of the farms. For example, the type of locational symbol used for a collective farm

* Moskovskaya Oblast' (B.G.N. spelling) is conventionally known as Moscow Oblast or Moscow Province.
** Available at CIA Map Library under Call No. 123375.

indicates the monetary return per 100 hectares of tillable land (excluding the value of those agricultural products that are used on the collective farm itself). The color used for the name of a collective farm indicates one of the following categories of production per 100 hectares of tillable land: (1) more than 280 centners of milk and more than 30 centners of meat,* or 25 centners of pork; (2) less than 280 centners of milk and less than 30 centners of meat*; (3) more than 280 centners of milk; and (4) more than 30 centners of meat,* or 25 centners of pork. Supplementary symbols are supplied for collective farms that grow 50 to 100 hectares or more than 100 hectares of corn, but unfortunately these symbols are not distinctive enough to be read easily. Also difficult to differentiate are the symbols that show whether a collective farm achieves a yield greater or less than 5 centners of flax fiber per hectare. The distinction between the symbols for collective farms with less than 30 hectares and those with 30 or more hectares of berry patches and orchards, however, is perfectly clear. State farms are located by symbols that indicate their agricultural specialization as (1) vegetables and potatoes, (2) milk and livestock, or (3) pigs.

Two map insets provide supplementary information about distributions of selected elements of the economy that are related to agriculture. One inset at the scale of 1:1,500,000 is a standard soils map on which 14 types of soils are indicated. Superimposed are the isotherms of the mean monthly temperature for July. The presence of this basic information permits rapid understanding of certain agricultural characteristics of the oblast. For example, this small map clearly portrays the relationship between the location of the flax-raising region in the north and west and the low temperatures characteristic of that region. The map also shows that the grain region is limited to a small area in the south, where warmer temperatures and chernozem and degraded chernozem soils are characteristic.

The other map inset, Electrification of Collective Farms of Moskovskaya Oblast', is at the scale of 1:2,000,000. Information portrayed on this map indicates that electrification has been completed on collective farms in the central region of urban market gardening and in the centers of poultry raising east of Moscow. In the western flax-raising region, however, the degree of completion drops to less than 50 percent. Selected symbols differentiate the more important thermal electric and hydroelectric stations that now supply electricity to the agricultural economy from the hydroelectric stations under construction.

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* Translated literally; probably refers to beef.

Four graphs are inset -- probably to give an impression of a greater dynamic growth of agriculture in Moskovskaya Oblast' under the Khrushchev regime than has actually occurred. Three of the graphs show increases in production of milk, meat, and potatoes and other vegetables; the fourth illustrates the monetary returns from collective farms. It is noteworthy that three of the graphs use figures for 1953 (the year of Stalin's death) for comparison with projected totals for either 1960 or 1965 or with figures for 1958 (the first full year in which Khrushchev was completely in power).

The format of Moskovskaya Oblast': Map of Agriculture is similar to that of standard political-administrative maps issued by the Chief Administration of Geodesy and Cartography (GUGK). The scale is identical with that of the political-administrative map of Moskovskaya Oblast', thus facilitating direct comparisons between the two. The map was compiled under the scientific direction of Professor Vladimir Ivanovich Sukhov, chiefly on the basis of 1957-58 data. Professor Sukhov, who is believed to be connected with the Moskovskiy Institut Zemleustroystva (Moscow Institute of Organized Land Exploitation), is also the editor of a textbook, Sostavleniye Sel'skokhozyaystvennykh Kart (The Compilation of Agricultural Maps), published in 1957, which contains an earlier and less elaborate agricultural map of Moskovskaya Oblast'. Although the earlier map is less detailed in the sense that quantitative data are not given, actually there are more categories of agricultural specialization. Consequently, the distributional pattern on the earlier map is more fragmented. It is possible that the new Moskovskaya Oblast': Map of Agriculture, having fewer agricultural specializations but more quantitative information, will be further modified by Professor Sukhov in future editions.

ATLAS OF THE NORTHERN FRONTIER OF INDIA

In January 1960 the Indian Ministry of External Affairs published a collection of maps entitled "Atlas of the Northern Frontier of India."* Most of the maps comprising the atlas are reproductions, of varying quality, of earlier small-scale maps pertaining to the northern border of India. They are grouped in four sections:

I. General
II. Maps Showing the Boundary in the Ladakh Sector
III. Maps Showing the Boundary in the Assam Sector
IV. Variations in Chinese Maps from 1928 Onwards

The foreword of the atlas clearly indicates that the Indian Government considers that "the northern frontier of India, as shown on official Indian maps, is the traditional boundary between India and China." The maps selected to substantiate this statement are chiefly historical ones published by such diverse authorities as the China Inland Mission of 1908 and the (American) National Geographic Society.

Individual maps in the atlas -- for example, those relating to the McMahon Line as agreed upon at the Simla Conference of 1914 -- may be of particular interest to analysts concerned with detailed aspects of the boundary problem. The greatest value of the atlas, however, is the fact that it presents in convenient single-volume form a collection of maps by several different publishing authorities depicting various renditions of the China-India border.

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* Available at CIA Map Library under Call No. aH306-23B .I39 1960.

NEW ATLAS OF EASTERN CENTRAL EUROPE

Recently a large atlas* of Eastern Central Europe that is impressive in its size, range of subjects covered, and fine cartography was published by the West German firm of Velhagen and Klasing. The main liabilities of the work are its paucity of post-World War II data and the propagandistic selection of subjects -- a selection aimed at keeping alive in Germany the memory of the "lost Eastern Territories."

Most of the maps cover an area extending from Berlin eastward to Minsk, USSR, and from Memel southward to Vienna. The map scales vary, but 1:2,000,000 is most commonly used for the main plates, and 1:8,000,000 or 1:4,000,000 for the smaller maps. Although the atlas includes no interpretive text, the legends are clear and complete on the maps and in the supplementary volume of translations.

A wide range of subjects is covered: geology, soils, climate, vegetation, agriculture, land use, natural resources, industry, transportation, history, political boundaries, and population. Only selected aspects of history, economics, and demography are given much emphasis, however, and the resulting picture of "Mitteleuropa" is incomplete and poorly balanced. For example, the economy of Central Europe from the Middle Ages to 1945 is portrayed on many maps, whereas post-World War II economic development is sedulously ignored. Similarly, although nine maps show the spread throughout Central Europe from 1300 to 1800 of "West European-type urban settlements," not a single map depicts World War II destruction or postwar reconstruction of settlements in Central Europe.

In spite of its shortcomings in current information and subject balance, the atlas includes a number of noteworthy maps dealing with physical geography (soils, climate, vegetation, natural regions), territorial changes 1938 to 1945, population of Eastern Germany and Poland 1931-33 and 1956, linguistics, and the economic-functional character of larger settlements prior to World War II. Seven maps are of

* Atlas Östliches Mitteleuropa, edited by Theodor Kraus et al, Velhagen and Klasing, Bielefeld, 1959. CIA Map Library Call No. aF300.K91 1959. The atlas measures 2 inches by 15 inches by 22 inches and includes some 190 maps, 70 photographs, and a 1,000-item bibliography. A supplement of English and French translations of the map legends is available in a separate volume: CIA Map Library Call No. aF300.K91 1959 Legends.

particular interest in that they show the geographic distribution in all zones of Germany of expellees from the "eastern territories." Among these maps are individual ones, based on 1946 data, that locate expellees from each major area of origin -- for example, Silesia, Pomerania, or East Prussia.

Most of the maps in the atlas present information that is essentially truthful within date and scale limitations, but the spotty, backward-looking picture of Central Europe that is conveyed by the atlas as a whole is misleading.